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# ***Skill Procedures:***

## ***Automatic Transport Ventilators***

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### ***I. Usage***

1. Patients that are apneic or exhibiting agonal respirations requiring ventilatory support, after a paramedic has established and secured the airway with either a nasal or oral tracheal tube. ATV's may be used on patients in full arrest.



**Note Well:** *The ATV must be approved for use on pediatric patients.*



**Note Well:** *Automatic transport ventilators are not intended nor shall they be used to reduce current personnel staffing levels.*

### ***II. Procedural Guidelines***

1. Determine need for ventilations or assisted ventilations.
2. Establish airway and employ conventional BLS airway adjuncts and ventilatory support according to protocol.
3. Paramedic shall perform oral or nasal intubation according to appropriate protocol. Tube shall be secured and proper placement shall be confirmed using a bag-valve device and conventional assessment methods.



**Note Well:** *The paramedic is responsible for all airway management and must frequently reassess endotracheal tube placement. Bilateral breath sounds are to be checked after each patient movement (e.g., placing patient on stretcher, moving patient to ambulance, loading patient into ambulance, etc.).*

*An end-tidal CO<sub>2</sub> detector shall be used if patient has pulses.*

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#### ***II. Procedural Guidelines (continued)***

4. Assemble components of automated ventilator and insure proper working order, including pressure limit alarm.
5. Determine proper Tidal Volume for patient. Use the following equation for adult and pediatric patients:
  - A.  $10 \text{ ml} \times \text{weight in kilograms} = \text{Tidal Volume (10ml/kg)}$ .
  - B. Set the Tidal Volume on the ventilator's control module accordingly.
6. Set desired breaths per minute on the ventilator's control module:
  - A. Adult (12-15 per minute, adult).
  - B. Pediatric (20-24 per minute, pediatric).
7. Remove bag-valve device and attach the outlet port of the ventilator assembly to the endotracheal tube.
8. Observe chest rise during the ventilation cycles. Chest rise should appear normal and symmetrical. Personnel shall continue to monitor chest rise throughout the remainder of patient care, as is done normally using a bag-valve device.
9. Personnel shall monitor PSI level in oxygen cylinder.



**Note Well:** *Personnel shall continually observe the patient and document patient response to any changes while the device is operational. Personnel shall chart the initial settings (rate/tidal volume), and any subsequent changes, when the device is utilized. Such documentation shall appear on the patient care report (PCR).*

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#### ***III. Cleaning, Maintenance & Testing***



**Note Well:** *Agencies using this equipment must be certain to follow the manufacturer's instructions to the letter regarding the use, maintenance, cleaning, and regular testing of the devices.*

1. The units must be disinfected, inspected, and tested after every patient use.
2. The units shall undergo preventive testing and maintenance by qualified personnel annually.
3. Agencies shall arrange for (at least) annual inspections and testing of the equipment by a manufacturer's representative (or designee).
  - A. Documentation of this service shall be maintained in a service-log. This record shall be kept by each agency using ATV's.
4. Agency personnel must be thoroughly trained and regularly re-trained in the device's use. Such training shall occur annually and shall be thoroughly documented.

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#### ***IV. "Class I" Automatic Transport Ventilators***



**Note Well:** Only "Class I" Automatic Transport Ventilators shall be authorized for use, and shall have the following minimum features listed below. (from JAMA Supplement, October 28, 1992 - Vol. 268, No. 16)

1. A lightweight connector with a standard 15-mm/22-mm coupling for a mask, endotracheal tube, or other airway adjunct.
2. A lightweight (2 to 5 kg), compact, rugged design.
3. Capability of operating under all common environmental conditions and extremes of temperature.
4. A peak inspiratory pressure limiting valve set at 60 cm H<sub>2</sub>O with the option of an 80 cm H<sub>2</sub>O pressure (available for use at the discretion of the medical director) that is easily accessible to the user.
5. An audible alarm that sounds when the peak respiratory limiting pressure is generated to alert the rescuer that low compliance or high airway resistance is resulting in a diminished tidal volume delivery.
6. Minimal gas consumption (e.g., at a tidal volume of 1 L and a rate of 10 breaths per minutes [10-L/min ventilation], the device should run for a minimum of 45 minutes on an "E" cylinder).
7. Minimal gas compression volume in the breathing circuit.
8. Ability to deliver a FiO<sub>2</sub> of 1.0.

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#### ***IV. "Class I" Automatic Transport Ventilators (continued)***

9. An inspiratory time of 2 seconds in adults and a maximal inspiratory flow rate of approximately 30 L/min in adults (15 L/min children).
10. At least 2 rates, 10 breaths per minute for adults. If a demand flow valve is incorporated into the ATV, it should deliver a peak inspiratory flow rate on demand of at least 100/min at -2 cm H<sub>2</sub>O triggering pressure to minimize the work of breathing.

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